

Endoscopic Resection of a Flat (Type IIb) Early Barrett's Cancer with a Reusable Ligation Device



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Abstract

Endoscopic resection (ER) is an accepted curative treatment of early neoplastic lesions in Barrett's esophagus. Long-term results in large patient cohorts have shown excellent outcome and safety of ER in patients with high-grade dysplasia and mucosal cancer. ER can be performed either with a transparent cap at the tip of the endoscope or with a ligation device. Both methods have shown to be equivalent. This article is part of an expert video encyclopedia.

Keywords

Barrett's esophagus; Early Barrett's cancer; Endoscopic resection; Standard endoscopy; Video.

Video Related to this Article

Video available to view or download at [doi:10.1016/S2212-0971\(13\)70020-7](http://dx.doi.org/10.1016/S2212-0971(13)70020-7)

Technique

High-definition white-light endoscopy, acetic acid staining, piecemeal resection with reusable ligation device.

Materials

- Endoscope: EG-530 WR, Fujinon Europe, Germany.
- Solution: Acetic acid 1.5%.
- Argon-Plasma-Coagulation: VIO APC, Erbe, Tübingen, Germany.
- Ligation device: Euroligator, Wurster Medizintechnik, Germany.
- Snare: Olympus Snare Master 15 mm SD-21OU-15, Olympus, Germany.
- Clip: EZ Clip, Olympus, Germany.

Endoscopic Procedure

Endoscopic treatment of early Barrett's cancer has been shown to be safe and highly effective with excellent long-term results.¹⁻³ Before endoscopic resection (ER), a careful inspection of the lesion is mandatory. Advanced imaging techniques (e.g., chromoendoscopy or acetic acid staining) should be used to facilitate recognizing the borders of the lesion. After the lesion is clearly demarcated, marking of the lesion with a distance of at least 5 mm should be performed either with argon plasma coagulation or with the tip of the snare using the coagulation mode.⁴ In our case, the flat type IIb lesion

becomes clearly visible after acetic acid staining at the 3 o'clock position. The author performed marking of the lesion with a distance of approximately 5 mm to the visible borders to perform a complete radical ER.

Endoscopic resection of the whole lesion was performed in one session with five single ERs. Using the ligation device, prior submucosal injection is not necessary in contrast to the cap technique.⁴ During ER, it is crucial to avoid too much overlapping between the respective resection sites to prevent perforation. However, it is also important to avoid small islands of neoplastic tissue left behind after 'piecemeal' ER. The whole area between the markings should be resected. In case of bleeding after ER, there are different methods to stop the bleeding: Usually the endoscopist can identify one or two small vessels as a cause of the bleeding. After careful injection of saline in the remaining submucosal tissue, the vessel can be coagulated by using the tip of the snare and the coagulation mode. This should be performed with caution as coagulation can also cause a perforation. A further method to stop bleeding is the use of metal clips. In this case, the clip was placed on the bleeding vessel under endoscopic control. However, clipping can be problematic if the lesion has not yet been totally resected. The clip in the esophagus may cause problems during subsequent resections.

Moreover, a coagulation forceps can be used to carefully coagulate the bleeding vessel.

After ER, the resection specimen should be pinned on cork and put into containers with formalin. The pathologist should report the infiltration depth of the tumor (T1m1-3, T1sm1-3); tumor differentiation grade (G1-3); presence of lymph (L-status) or blood vessel infiltration (V-status); and the completeness of resection at the vertical and horizontal margin (R-status). The histological workup of the resection specimen showed a well-differentiated mucosal cancer (pT1m3) without any risk factors for lymph node metastasis.

After resection, the patient should stay on clear liquids for 1 day. The author usually administered proton pump inhibitors at a dose of 3×40 mg for 4 weeks to facilitate healing.

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Key Learning Points/Tips and Tricks

- Take your time for thorough inspection of the Barrett's segment and use advanced imaging techniques for better visualization of the borders of the lesion.
- Start with the 'piecemeal' resection at the proximal margin.
- Be careful during suction not to suck the muscle layer of the previous resection into the ligation device.
- Place the snare underneath the rubber band to achieve larger resections.
- Plan the steps of the resection in advance and do not leave any residual islands of neoplastic tissue behind.

Scripted Voiceover

| Time (min:sec) | Voiceover text |
|-------------------|--|
| 00:00 | This is a 66-year-old Caucasian male patient referred for endoscopic diagnosis and treatment of early Barrett's cancer. During pullback a mucosal irregularity can be visualized at the 3 o'clock position. |
| 00:15 | After spraying with 1.5% acetic acid solution the mucosal surface can be better visualized. Regular Barrett's mucosa becomes whitish and has a cerebriform mucosal pattern. |
| 00:35 | At the 1 to 3 o'clock position irregular mucosa with reddish appearance can be seen as a sign for early Barrett's neoplasia. |
| 00:43 | We usually perform marking around the lesion with about 5 mm distance to the visible borders. In this case we used argon plasma coagulation with the VIO generator and a power setting of 30 W and effect 2. |
| 01:02 | The endoscope with the mounted ligation device is reintroduced and suction is applied at the proximal margin of the lesion. Make sure that the marking sites are sucked into the ligation cylinder. After that the rubber band is released in order to create a pseudopolyp. |

| | |
|-------|---|
| 01:19 | The snare is advanced and placed over the pseudopolyp. When closing the snare make sure that the polyp is cut underneath the rubber band. |
| 01:42 | Afterwards the resected specimen is caught with the polyp grasper and retrieved. |
| 01:50 | A 2nd ligation was performed. Make sure that there is a slight overlap to the previous resection site to avoid mucosal islands or bridges with neoplastic tissue left behind. |
| 02:25 | On the other hand side it is very important to avoid larger overlap because the muscularis propria of the previous resection site can be sucked into the ligation device resulting in a perforation after resection. |
| 03:25 | After 4 resection you have a nice view onto the muscle layer without any residual neoplastic tissue. |
| 03:42 | The 5th resection resulted in a spurting bleeding from a submucosal vessel. |
| 03:58 | A clip is placed onto the bleeding vessel under endoscopic view. |
| 04:08 | At the end of the procedure the whole Barrett's cancer has completely been resected and there are no residual markings. The patient should stay on clear liquids for one day and we recommend three times 40 mg of proton pump inhibitors for 6 weeks in order to facilitate healing. |

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